

**Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application:

- 1.-38. (canceled)
39. (previously presented) A cell that produces a glycoconjugate of interest in the absence of an exogenously supplied nucleotide triphosphate, the cell comprising heterologous genes encoding one or more sugar nucleotide regenerating enzyme and one or more glycosyltransferase.
40. (original) The cell of claim 39, wherein the cell is a prokaryotic cell.
41. (original) The cell of claim 40, wherein the prokaryotic cell is a bacterium.
42. (original) The cell of claim 41, wherein the bacterium is *E. coli*.
43. (original) The cell of claim 42, wherein the *E. coli* is LacZ<sup>-</sup>.
44. (original) The cell of 39, wherein the cell is a eukaryotic cell.
45. (original) The cell of claim 44, wherein the eukaryotic cell is a yeast.
46. (original) The cell of claim 39, wherein at least one of the heterologous genes is integrated into the genome of the cell.
47. (previously presented) The cell of claim 39, wherein the heterologous genes are encoded within one or more plasmids.
48. (previously presented) The cell of claim 47, wherein the heterologous genes are encoded within one plasmid.

49. (withdrawn) A method of producing a glycoconjugate of interest in the absence of an exogenously supplied nucleotide triphosphate, comprising the step of contacting a cell comprising heterologous genes encoding:

- (i). one or more encoding sugar nucleotide regenerating enzymes selected from the group consisting of GalK, GaIT, GaIU, PykF, Ndk, PpK, AcK, PoxB, Ppa, PgM, NagE, Agm1, glmU, a GaINAc kinase, a pyrophosphorylase, Ugd, NanA, Cmk, NeuA, Alg2, Alg1, SusA, ManB, ManC, a phosphomannomutase, GaIE, GMP, GMD, and GFS; and
- (ii). one or more glycosyltransferase, with a bioenergetic.

50.-51. (canceled)

52. (currently amended) The cell of claim 39, wherein the one or more sugar nucleotide regenerating enzyme is selected from the group consisting of galactokinase, GalK, galactose-1-phosphate uridylyltransferase, GaIT, glucose-1-phosphate uridylyltransferase, GalU, pyruvate kinase, PykF, nucleotide diphosphate kinase, Ndk, polyphosphate kinase, PpK, acetate kinase, AcK, pyruvate oxidase, PoxB, pyrophosphatase, Ppa, phosphoglucomutase, PgM, N-acetylglucosamine permease, NagE, acetylglucosamine-phosphate mutase, Agm1, N-acetylglucosamine-1-phosphate uridylyltransferase, glmU, a N-acetylglucosamine GalNAe kinase, a pyrophosphorylase, uridine 5'-diphosphoglucouronic acid 6-dehydrogenase, Ugd, N-acetylneuraminate lyase, sialic acid aldolase, NanA, cytosine 5'-monophosphate kinase, Cmk, cytosine 5'-monophosphate-N-acetylneuraminic acid synthetase, NeuA,  $\alpha$ 1,3-mannosyltransferase, Alg2, guanosine 5'-diphosphomannose:Dol-PP-N-acetylglucosamine  $\beta$ -mannosyltransferase, Alg1, sucrose synthetase, SusA, ManB, mannose-1-phosphate guanyltransferase, guanisine 5'-diphosphate-mannose pyrophosphorylase, ManC, a phosphomannomutase, uridine 5'-diphosphate-galactose 4-epimerase, uridine 5'-diphosphate-glucose 4-epimerase, GaIE, guanosine 5'-diphosphate-mannose pyrophosphorylase, GMP, guanosine 5'-diphosphate-D-mannose 4,6-dehydratase, GMD, and guanosine 5'-diphosphate-L-fucose synthetase GFS.

53. (currently amended) The cell of claim 39 comprising genes encoding galactokinase, GalK, galactose-1-phosphate uridylyltransferase, GalT, and glucose-1-phosphate uridylyltransferase GalU.
54. (currently amended) The cell of claim 39 comprising a gene encoding nucleotide diphosphate kinase Ndk.
55. (currently amended) The cell of claim 53 comprising a gene encoding polyphosphate kinase PpK.
56. (currently amended) The cell of claim 53 comprising a gene encoding pyruvate kinase PykF.
57. (currently amended) The cell of claim 53 comprising genes encoding pyruvate oxidase PoxB, nucleotide diphosphate kinase Ndk, and pyrophosphatase Ppa.
58. (currently amended) The cell of claim 39 comprising a gene encoding sucrose synthetase SusA.
59. (currently amended) The cell of claim 58 further comprising a gene encoding uridine 5'-diphosphate-galactose 4-epimerase or uridine 5'-diphosphate-glucose 4-epimerase GalE.
60. (currently amended) The cell of claim 58 further comprising a gene encoding glucosyltransferase GluT.
61. (currently amended) The cell of claim 58 further comprising genes encoding uridine 5'-diphosphoglucuronic acid 6-dehydrogenase Ugd and a glucuronyltransferase UGT2B7.
62. (previously presented) The cell of claim 39, wherein the one or more glycosyltransferase(s) is selected from the group consisting of a galactosyltransferase, a glucosyltransferase, a N-acetylglucosaminyl transferase, an N-acetylgalactosaminyl transferase, a glucuronyltransferase, a sialyltransferase, a mannosyltransferase, and a fucosyltransferase.

63. (currently amended) The cell of claim 62 wherein the galactosyltransferase is selected from the group consisting of  $\alpha$ 1,3 galactosyltransferase,  $\beta$ 1,4 galactosyltransferase, and  $\alpha$ 1,4 galactosyltransferase LgtB and LgtC.

64. (currently amended) The cell of claim 62, wherein the glycosyltransferase is a glucosyltransferase ~~is selected from the group consisting of LgtF, Alg5, and DUCT~~.

65. (currently amended) The cell of claim 62, wherein the glycosyltransferase is a N-acetylglucosaminyl transferase ~~is LgtA~~.

66. (currently amended) The cell of claim 62, wherein the N-acetylgalactosaminyl transferase is uridine 5'-diphosphate-N-acetylgalactosamine:2'-fucosylgalactoside- $\alpha$ -3-N-acetylgalactosaminyl transferase UDP-GalNAc:2'-fucosylgalactoside a 3 N-acetylgalactosaminyl transferase.

67. (currently amended) The cell of claim 62, wherein the glycosyltransferase is a glucuronyltransferase ~~is UGT2B7~~.

68. (currently amended) The cell of claim 62, wherein the glycosyltransferase is a sialyltransferase ~~is SiaT 0160~~.

69. (currently amended) The cell of claim 62, wherein the glycosyltransferase is a mannosyltransferase ~~is selected from the group consisting of Alg1 and Alg2~~.

70. (currently amended) The cell of claim 62, wherein the fucosyltransferase is selected from the group consisting of  $\alpha$ 1,3- fucosyltransferase,  $\alpha$ 1,2- fucosyltransferase, and  $\alpha$ 1,3/4- fucosyltransferase  ~~$\alpha$ 1,3-FucT,  $\alpha$ 1,2-FucT, and  $\alpha$ 1,3/4-FucT~~.

71. (withdrawn) A method of producing a glycoconjugate of interest in the absence of an exogenously supplied nucleotide triphosphate, the method comprising:

contacting a cell comprising heterologous genes encoding susA, galE, and a glycosyltransferase with a bioenergetic.

72. (withdrawn) The method according to claim 71, wherein the bioenergetic comprises fructose generated within the cell by susA acting on sucrose.

73. (withdrawn) The method according to claim 72 further comprising supplying the sucrose to the cell.

74. (withdrawn) The method according to claim 71, wherein the glycosyltransferase is a galactosyltransferase.

75. (withdrawn) The method according to claim 74, wherein the galactosyltransferase is  $\alpha$ 1,3GaIT.

76. (withdrawn) The method according to claim 71, wherein the glycosyltransferase is LgtC.